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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/686,937	10/16/2003	Bin Wu	KCX-692 (19490)	4594

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EXAMINER	
ARNOLD, ERNST V	

ART UNIT	PAPER NUMBER
1616	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/686,937	WU ET AL.	
	Examiner	Art Unit	
	ERNST V. ARNOLD	1616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 January 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4,5,7,9-23 and 25-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 2, 4, 5, 7, 9-23 and 25-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claims 1, 2, 4, 5, 7, 9-23 and 25-30 are pending and under examination.

Withdrawn rejections:

Applicant's amendments and arguments filed 1/6/09 are acknowledged and have been fully considered. Any rejection and/or objection not specifically addressed below is herein withdrawn.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 2, 4, 5, 7, 9-23 and 25-30 remain/are rejected under 35 U.S.C. 103(a) as being unpatentable over DERWENT-ACC-NO: 1992-393132; Abstracting JP 04290547 in view of Takagishi et al. J. Polym. Sci. Polym. Chem. Ed 1985, volume 23, 2875-2878 and with respect to

claims 17-20 and 25, Stoddart et al. (EP 1214878A1) and, with respect to claims 9-12, Sebag et al. (US 4,275,054) and, with respect to claims 13-16 and 26-28, Connolly (US 5,120,693).

Applicant claims a method for reducing odor comprising forming a coordination complex between a transition metal and a polydentate compound and contacting the coordination complex with an odorous compound.

Determination of the scope and content of the prior art

(MPEP 2141.01)

DERWENT-ACC-NO: 1992-393132 teaches the combination of various **transition metal** (Mn, Fe, Co, Ni, Cu, Zn etc…) salts, silicate, **bentonite**, copolymer of isobutene-maleic anhydride and **polyethyleneimine** as a deodorant gel (Title and Abstract). It is the Examiner's position that PEI will complex with the metal ions in the absence of evidence to the contrary. DERWENT-ACC-NO: 1992-393132 clearly teaches that the deodorant has a high adsorbing capacity for **malodorous gases** such as hydrogen sulphide, ammonia, mercaptan, amines and aldheydes (Abstract). DERWENT-ACC-NO: 1992-393132 clearly states that the metal salts are enclosed in the structure of the silicic acid gels which contain PEI which is known to complex transition metals. PEI intrinsically contains positively charged ligands. Bentonite or the silicate can serve as a carrier for the complex.

Takagishi et al. teach the binding of divalent metal ions Cu2+, Co2+, Ni2+ and Zn2+ by **crosslinked polyethyleneimine** (page 2875, first paragraph). Takagishi et al. teach that

crosslinking produces ***water insoluble polymers*** (page 2875, paragraphs 1-5 and page 2877, paragraphs 2).

Stoddart et al. disclose methods to control undesirable odors such as ammonia that utilize certain urease inhibitor complexes formed from a divalent metal ion and a polyanionic, preferably amine based, chelating agent (Abstract). The composition can be combined with pet litter, which comprises high surface area particles such as various clays and ([0035]). The composition can be utilized in a wide variety of articles and devices such as wiping clothes, diapers (which are comprised of cellulose fibers) and paper towels where the composition is *absorbed into, adsorbed onto or chemically linked or bonded to the substrate* ([0039-0042]). A bis-epoxide can be used to link HEDTA to cotton ([0043] and [0056]). *Thus, Stoddart et al. establish the concept of chemically linking odor control compositions to various substrates.*

Sebag et al. teach deodorant compositions comprising cationic polymers such as polyethyleneimines (Column 4, lines 37-42; Column 15, Table 1, number 7 and claims 1 and 2). Sebag et al. teach crosslinking is effected with a crosslinking reagent selected from the group consisting of epihalohydrins, diepoxides, dianhydrides, unsaturated anhydride and the bis unsaturated derivatives and provide several examples using epichlorohydrin (Column 3, lines 25-30 and Column 8, Example Ia, for example).

Connolly et al. teach agglomerates of zeolitic molecular sieves which are bonded with particles of spherical amorphous colloidal-sized silica particles having nominal diameters in the range of 40 to 800 nanometers which are ideally suited for use in odor elimination (Abstract).

Ascertainment of the difference between the prior art and the claims

(MPEP 2141.02)

1. The difference between that which is instantly claimed and that of the DERWENT Abstract is that the DERWENT Abstract does not expressly teach crosslinking the PEI or the specific crosslinking reagents resulting in a substantially water insoluble polymer complex for use in the method for reducing odor. This deficiency in the DERWENT Abstract is cured by the teachings of Takagishi et al. and Sebag et al.

2. The difference between that which is instantly claimed and that of the DERWENT Abstract is that the DERWENT Abstract does not expressly teach a method for reducing odor further comprising combining high surface area particles with said transition metal and said polydentate compound wherein said particles have an average size of less than about 100 nm and a surface area of from about 50 to about 1000 square meters per gram and have a negative zeta potential. This deficiency in the DERWENT Abstract is cured by the teachings of Connelly et al.

3. The difference between that which is instantly claimed and that of the DERWENT Abstract is that the DERWENT Abstract does not expressly teach applying the complex to a substrate comprising a nonwoven, woven or paper web; cellulosic fiber; or chemically grafting to the substrate. This deficiency in the DERWENT Abstract is cured by the teachings Stoddart et al.

Finding of prima facie obviousness

Rational and Motivation (MPEP 2142-2143)

1. It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to use crosslinked PEI and the specific crosslinking reagents resulting in a substantially water insoluble polymer complex, as suggested by Takagishi et al., for use in the

method for reducing odor in the method of the DERWENT Abstract and produce the instant invention.

One of ordinary skill in the art would have been motivated to do this because Takagishi et al. teach that PEI crosslinked can produce polymers of various affinities for Cu2+ thus allowing for tuning of the amount of complexed Cu2+ (page 2877, last paragraph). Sebag et al. is relied upon for teaching the various crosslinking reagents available for one of ordinary skill in the art.

2. It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to use the particles taught by Connelly et al. in the method of the DERWENT Abstract and produce the instant invention.

One of ordinary skill in the art would have been motivated to do this because the DERWENT Abstract provides the basic concept of using high surface area particles (silicates/bentonite) with the metal salts and PEI and Connelly et al. fills in the types of particles to use. In the absence of evidence to the contrary the particles would have a negative zeta potential and meet the surface area limitation. Please note that the USPTO is not equipped with the analytical equipment to measure each and every parameter such as zeta potential and surface area of the particles. Since the particles appear to be the same as instantly claimed, then the burden is then placed on Applicant to demonstrate otherwise. Objective evidence of nonobviousness, if any, must be commensurate in scope with that of the claimed subject matter. In re Kulling, 14 USPQ2d 1056 (Fed. Cir. 1990); In re Lindner, 173 USPQ 356 (CCPA 1972).

3. It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the complex of the DERWNT Abstract to a substrate comprising a

nonwoven, woven or paper web; cellulosic fiber; or chemically grafting to the substrate, as suggested by Stoddart et al., and produce the instant invention.

One of ordinary skill in the art would have been motivated to do this because substrates such as diapers come into contact with odors and Stoddart et al. teach means to control such odors by modifying the substrate.

A reference is good not only for what it teaches by direct anticipation but also for what one of ordinary skill in the art might reasonably infer from the teachings. (*In re Opprecht* 12 USPQ 2d 1235, 1236 (Fed Cir. 1989); *In re Bode* 193 USPQ 12 (CCPA) 1976).

In light of the forgoing discussion, the Examiner concludes that the subject matter defined by the instant claims would have been obvious within the meaning of 35 USC 103(a).

From the teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole was *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

Response to arguments:

Applicant asserts that it cannot be said that the PEI will complex with the metal ions. The Examiner looked to the specification to see what special step is required to get the PEI to complex with the metals. On page 25 lines 14 and 15 of the instant specification, it states: "The PEI-metal complexes (copper, iron (III), and zinc) were prepared by simply dissolving the corresponding metal salts in the PEI solution". So, all that is required to make these complexes is to have the two ingredients in the presence of one another. The primary reference has both of

these ingredients in the presence of one another. Since the reaction to form the complex is so simple then the Examiner can only reasonably conclude that when a metal ion contacts PEI a coordination complex is formed. Nothing has been shown to prove otherwise. Applicant's claim language does not limit the other ingredients present or the amounts of polyalkylimine and metal. Applicant asserts that the silicic acid gels enclose the metal salts, which has the implication that metal salts would not be available for coordination to the added PEI. This argument is not persuasive because there is nothing to suggest that water soluble liquid PEI would not mix into the aqueous gel and come into contact with metal salts dissolved therein. Thus the Examiner has provided clear articulated reasoning with sound chemical rationale in contrast to Applicants assertions without proof.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). Applicant has not discovered crosslinking PEI. Chemical crosslinking is well known in the art.

In response to applicant's arguments against the references individually, Sebag and Connolly, for example, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re*

Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Applicant asserts on the one hand that Sebag et al. do not disclose crosslinking a polyalkylamine but on the other hand acknowledges that the polyamino-polyamides Sebag et al. includes polyethyleneimines in the structure and these structures are crosslinked. This is confusing because the statements seem to contradict each other. Applicant and the Examiner appear to both agree that PEI is in the end structure and thus a polyalkylamine is in the end structure which is then crosslinked.

Applicant has only presented arguments which are not persuasive. The rejection is maintained.

Conclusion

No claims are allowed.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ernst V. Arnold whose telephone number is 571-272-8509. The examiner can normally be reached on M-F (6:15 am-3:45 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann Richter can be reached on 571-272-0646. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Ernst V Arnold/
Examiner, Art Unit 1616